LOUISIANA DEPARTMENT OF WILDLIFE & FISHERIES

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Annual Report 1983

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Wildlife and Fisheries

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This annual report to the Governor and members of the Louisiana Legislature will provide details on the many ongoing programs and responsibilities of the Department of Wildlife and Fisheries to enhance, protect, perpetuate and properly harvest the state's bountiful wildlife resources.

These programs and responsibilities are as broad and diversified as the resources themselves and of extreme importance to the hundreds of thousands of Louisiana citizens dependent upon wise and prudent management and utilization of these renewable treasures either for outdoor recreation or for a livelihood.

Details of these programs will be found in those sections of this report pertaining to the operation of the major divisions in the Office of the Secretary, Office of Wildlife and Office of Coastal and Marine Resources.

In this opening message, I seek only to highlight a few of the most important activities and accomplishments of the department during the calendar year 1983 as they affect the people of Louisiana.

The erratic winds of 1983 blew both fair and foul on Louisiana wildlife. It was a year when weather extremes were the norm rather than the exception.

Record rainfall and resultant flooding marked the early months of the year and forced the closures of some hunting seasons and had a significant effect on the harvests of shrimp, oysters, crabs and other seafoods.

As the year began, so it ended, as record cold gripped the state and impacted wildlife and fish all along the coast.

During all these times, Wildlife and Fisheries personnel were on the scene monitoring the situation and gathering information upon which a rational assessment of the situation could be made and proper action, if any was required, could be based.

All in all, 1983 was a very busy year for the Department of Wildlife and Fisheries. The uncontrollable rages of mother nature aside, it was a very good year for Louisiana sportsmen and the thousands of Bayou State citizens whose livelihoods are dependent on our vast renewable wildlife and fisheries resources.

New initiatives were begun, and existings programs continued and improved, that bode well for the future of Louisiana's wildlife and fisheries treasures.

Leading the list was the acquisition of large tracts of prime wildlife habitat in the Atchafalaya Basin and Tensas bottomlands. These valuable lands now belong to the citizens of Louisiana and will be preserved for and open to future generations.

The actual purchase of 10,232 acres in the Atchafalaya Basin, at a special ceremony in September at the Butte LaRose exit on Interstate Highway 10, was the culmination of years of hard work by this department, Governor Treen and his staff, the landowners involved and a host of interested groups and individuals.

This purchase consists of two parcels of land in Pointe Coupee and St. Martin Parishes near Little and Big Alabama Bayous. It has excellent deer, squirrel and rabbit populations and contains some of the very best woodcock wintering habitat in Louisiana.

The sport fishing prospects are good within the Big and Little Alabama Bayou systems at present, but can be improved drastically if better water quality and flow can be established.

The Tensas tract consists of 9,823 acres of bottomland hardwood forest in Franklin, Tensas and Madison Parishes. An option was also acquired on an additional 4,887 acres, but that purchase must await legislative approval.

The tract will offer some of the best deer hunting in the state, along with excellent populations of rabbit and squirrel, and waterfowl hunting and fishing in its many sloughs, bayous and woodland lakes. The acreage also has potential as a good turkey area.

Both these areas, teeming with myriad species of wildlife, are veritable paradises for the many Louisiana citi-

A MESSAGE FROM THE SECRETARY

zens who enjoy the non-consumptive forms of wildlife utilization such as bird watching, hiking and nature study.

In 1983, this department made a concerted effort to develop a plan to protect and properly manage our valuable renewable stocks of speckled trout and redfish.

At my direction, we went to great extremes to not only gather sound biological data, but to also get the input of all groups using the resource. Public hearings were conducted coastwide and sportsmen and commercial fishermen alike were allowed to contribute to the final draft proposal that was submitted to the legislature.

I presented to the legislature what I considered to be a very well thought out and workable plan that called for the establishment of a special finfish section that would be part of the department's existing Seafood Division and whose responsibility it would be to monitor and gather information about these valuable fishes.

The proposed legislation passed both houses of the legislature overwhelmingly, but died in conference committee due to some minor disagreements between commercial and sport user groups.

Subsequent to that defeat, Governor Treen, with my full support, appointed a special Governor's Finfish Task Force to study the problem and develop a management plan that would assure the protection and proper management of redfish, speckled trout and other finfish and would be acceptable to commercial and sport interests.

This task force, composed of knowledgeable representatives from commercial and sportfishing user groups, representatives of various consumer groups and a number of noted biological scientists, began work in late December and has hammered out a compromise management plan that is biologically sound and acceptable to all groups.

It is intended that this comprehensive finfish management plan will be presented to the 1984 Louisiana Legislature.

1983 also saw the inception of the Louisiana Seafood Promotion and Marketing Board. This board is charged with working to increase the consumption of Louisiana seafood through advertising, promotion and development of new markets. It also is empowered to make, underwrite or guarantee loans to residents for the purpose of upgrading the seafood industry.

Realizing that good enforcement is necessary for many of the department's technical programs to be successful, efforts were continued in 1983 to upgrade the Enforcement Division's programs, equipment and professionalism.

Two large high-speed ocean going vessels of 47 feet and 65 feet were received and put into service by the Enforcement Division during 1983. These vessels will make the department better able to monitor and protect the state's $1.2 billion seafood industry.

Eighty new four wheel drive vehicles and one hundred 39.5 police frequency radios received by the division in 1983 will provide wildlife agents with increased mobility and give them direct communication capabilities with various other police agencies.

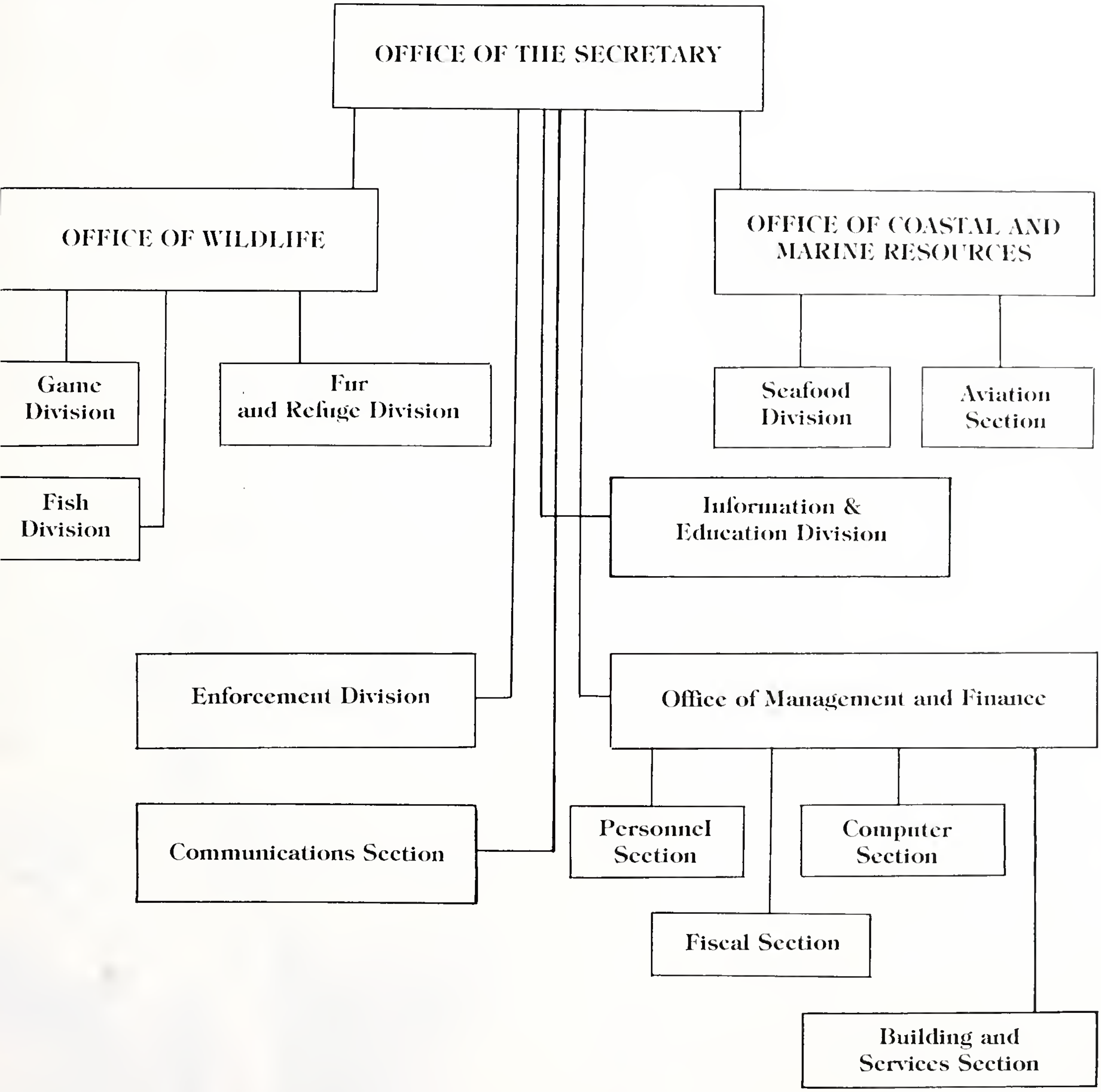
In addition, a Special Wildlife Agent Team was composed during the year. This is a group of agents which can be quickly assembled whenever and wherever special enforcement problems arise. The year also saw the formation of the Louisiana Operation Game Thief program, a program designed to involve the public in the apprehension and conviction of game law violators.

Louisiana citizens will enjoy the fruits of the seeds we planted in 1983 for generations to come.

Respectfully submitted,

Jesse J. Gundry
Secretary

ADMINISTRATIVE STRUCTURE CHART



Office of the Secretary

As chief administrative officer of the Department of Wildlife and Fisheries, the secretary is responsible for all wildlife and fisheries resource management activities in Louisiana. He is also deeply involved in vital conservation matters on both national and international levels. Primary objectives are to insure that the highest possible priorities are given at all times to wildlife and fisheries resources management and enhancement.

While administration of four major divisions within the department is delegated to assistant secretaries, responsibility for administration of the Office of Management and Finance, the Enforcement Division, the Information and Education Division and the Communications Section remain directly in the Office of the Secretary.

Within this structure of the Office of the Secretary, the Office of Management and Finance, which includes the Personnel, Fiscal, Building and Services and Computer Sections, is administered by the undersecretary.

Enforcement Division

The Enforcement Division is charged with enforcing all laws enacted by the Louisiana Legislature applying to wildlife and fisheries resources, as well as applicable portions of the state's Boating Act and assisting federal agents in enforcing federal regulations pertaining to migratory wildlife and endangered species.

The primary objective of the Enforcement Division's efforts is to help insure the perpetuation of Louisiana's vast and valuable wildlife and fisheries resources by allowing implementation of the technical programs of the department's other divisions that can only be fully realized by compliance with all game and fish laws.

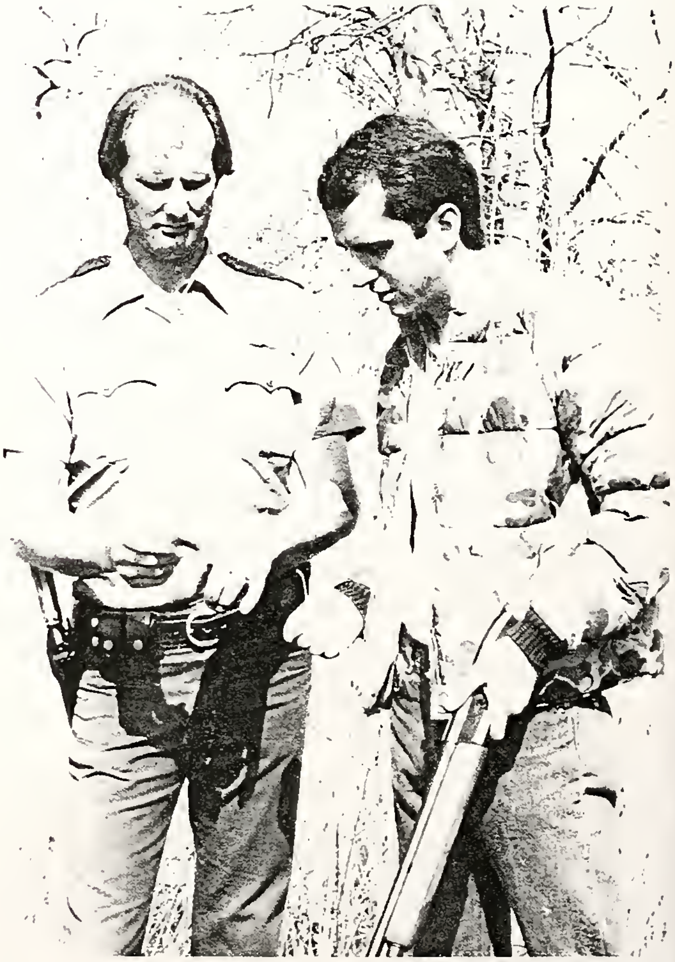
In times of emergency or natural disaster, the division cooperates fully with all other law enforcement agencies of the state and is an integral part of the Civil Defense action plan whenever the need arises. During the record flooding that ravaged the state during 1983, Enforcement Division personnel and equipment played a major role in the massive efforts aimed at saving life and property.

Modern wildlife enforcement agents are true professional lawmen, empowered to enforce all laws of the state of Louisiana. As part of a firm commitment to this professionalism, the division in 1983 continued to upgrade its training and agent recruitment programs and to provide its agents with the equipment necessary to do the job properly.

New wildlife enforcement agents must qualify with their service revolvers immediately upon employment and must successfully complete the mandatory P.O.S.T. certified Basic Police Officers Course offered by the Louisiana State Police Training Academy to be considered for permanent status as wildlife enforcement agents. This course, recently expanded from six to eight weeks in length, includes an intensive physical fitness program and instruction in water safety, first aid, defensive driving and wildlife related subjects.

In addition, existing personnel, from supervisors to clerical staff, attended a variety of courses in 1983 that will greatly aid them in the performance of their respective duties.

The enforcement division received permission in 1982 to use the universal police frequency, 39.5. With the installation of approximately one hundred 39.5 radios that were received in 1983, wildlife agents will have direct communication with sheriffs' departments and other law enforcement agencies throughout the state. This new communication capability is an added enforcement tool and safety factor for wildlife agents who often work alone in very remote locations. In addition, the division is anticipating delivery of 82 hand-held low band FM transceivers that will give every supervisor hand-held radio capabilities.



Of 105 new vehicles received in 1983, 80 were four-wheel drive Ram Chargers and 22 were Crown Victoria Police Special sedans.

The newly created Boating Safety Section, housed under enforcement, was busy in 1983 promoting boating safety statewide through various programs and displays. This section is composed of a statewide Boating Safety Officer, a Boating Accident and Investigation Officer, and one agent in each of the eight enforcement regions charged with the responsibility of coordinating the program in his respective region.

Efforts to initiate a statewide boating safety program were realized when the division received approximately $350,000 from the Biaggi Fund. These federal monies are allocated to the states for the promotion of safe boating. The division will receive the same amount from the Biaggi Fund in 1984, with a future anticipated funding level of one million dollars annually. These funds are used to pay salaries for hours worked on boating safety and for buying fuel for boats, and allows for the return to the conservation fund of state monies that would have been spent for these purposes.

Two large vessels (47′ LOA and 65′ LOA) were received by the division in 1983 and have been patrolling offshore waters in an effort to more effectively monitor and protect the state's $1.2 billion fisheries industry.

The Louisiana Firearms and Hunter Education Program, another federally funded program now under the Enforcement Division, grew noticeably in 1983, with its annual budget increasing to $500,000 from a previous $350,000. The hunter safety staff trained 360 new volunteer instructors, of which 200 were wildlife enforcement agents. Student certificates for 1983 totaled approximately 10,000.

The federal hunter education funds were also used for construction of public firing ranges, with ranges at Bodcau and Pearl River Wildlife Management Areas nearing completion and a new range under development on the recently acquired Atchafalaya Basin lands. The estimated cost of this new range is approximately $150,000.

Efforts to establish a Louisiana Operation Game Thief program were begun in 1983. The program, patterned after similar programs in other states, will offer cash rewards to citizens who provide information, anonymously or publicly, leading to the arrest and conviction of fish and game law violators.

The Special Wildlife Agent Team, a group of agents designed to assist in areas where special enforcement problems arise, was organized and proved to be highly successful on a number of occasions in 1983. This team is composed of two enforcement agents from each region and is a highly visible force that can be quickly moved into problem areas.

Communications Section

The marine maintenance portion of what was previously the Marine Maintenance and Communications Section was phased out by the department in 1983 as a cost saving measure.

The Communications Section provides the only 24-hour, toll-free public assistance "800" telephone line (1-800-442-2511) for reporting violations of fish and game laws, boating accidents and other emergencies. It also provides department personnel with access to the boating registration computer terminal, National Crime Information Center terminal, Lake Pontchartrain Causeway Avoidance Warning System terminal, long range single side band radio communication to the department's large vessels, VHF radio contact with the U.S. Coast Guard, and FM low band radio contact with wildlife agents, aircraft, small boats and outlying camps.

The section also operates as an interface with other agencies providing coordinated information on overdue hunters and fishermen, search and rescue, and other emergency activities on a 24-hour basis.

Four field service technicians provide vital on-the-spot statewide repairs and installation of all mobile communication and electronic equipment used by the department. Major repairs are handled by the central radio shop that consists of two bench grade radio technicians and one technical supervisor.

The communications section also provides public address systems and legal recordings for all department board meetings and public hearings conducted by the department.

The department's current radio system consists of 32 base stations, 887 mobile units, 232 portable units, 97 boats and six aircraft.

Information and Education Division

The Information and Education Division reports directly to the secretary and is responsible for disseminating information and educational material about all of the department's diversified programs, activities and accomplishments.

The success of many Wildlife and Fisheries programs depends directly on public acceptance and understanding, and it is the task of the Information and Education Division to help provide both. In doing so, the division always stresses the importance , both recreationally and economically, of the prudent use and wise management of Louisiana's vast renewable wildlife and fisheries resources.

To accomplish its purpose, the division employs a wide variety of media and informational/educational techniques, including news releases, news features, publication of the *Louisiana Conservationist* magazine, personal contact with in-state, national and international media, production of movies and other educational material, personal mailings, a variety of wildlife and conservation education programs, radio and television programs and various types of displays.

The 32-page full-color bimonthly magazine the *Louisiana Conservationist*, with a circulation approaching a quarter million, is read by an estimated 1 million persons. With its readers running the gamut from young to old, city dwellers to rural residents, its potential for bringing the department's conservation program directly to the public is unsurpassed. It is mailed, free of charge, to all Louisiana residents who request it. Out-of-state mailings are limited to persons in the Armed Forces, conservation and natural resource libraries, state conservation agencies and some government officials.

During 1983, the division prepared and sent out 108 news releases concerning department activities and programs. In addition, periodic news feature stories, complete with 5x7 glossy photographs, were prepared and sent to over 100 selected newspapers throughout the state.

These feature stories are always well received and widely used. They stress conservation and wise wildlife management and point out some of the many successes of this department to the citizens of the Bayou State.

The division also provides photographs, slides and information to a wide variety of individuals on request. Division personnel also work with visiting out-of-state writers, photographers and movie producers who are in the state preparing works on Louisiana wildlife resources or the management of those resources.

The Information and Education division's Audio/Visuals section completed two motion pictures, one slide show and five PSA's during 1983.

The two motion pictures were entitled "Striper Fever" and "Louisiana's Living Treasures". "Striper Fever" dealt with the mushrooming sport fishery developing in Louisiana for the department-stocked striped bass. This fishery is not only a boon for Louisiana anglers, but provides a needed shot in the arm for the state's tourist industry.

"Louisiana's Living Treasures" provides an overview of the living renewable wildlife treasures of the Bayou State and stresses the need for proper management of these resources.

The slide presentation offers instruction on trapping coyotes, a growing nuisance for many Louisiana landowners and farmers.

During 1983, the division's library filled 2,059 requests for educational films and mailed out 3,175 publications to a variety of schools, sportsmen, conservation organizations, other groups and interested individuals.

Wildlife Management Educators in the division were busy in 1983, conducting 1,927 programs before an estimated 90,628 persons in schools, colleges, churches, civic and sportsmen's groups, Boy and Girl Scout Troops, 4-H clubs and similar groups.

In addition, they presented 28 radio programs and 22 television programs during the year that carried the department's conservation message to tens of thousands of homes statewide.

The Wildlife Management Educators also erected 71 wildlife displays, 49 of which were manned, at various fairs and festivals, and for special groups. These displays were open 217 days and were viewed by an estimated 1.3 million persons. The division's motorhome wildlife display van was displayed a total of 10 days during the year and was viewed by thousands of Louisiana citizens.

Hunter and boating safety were two other topics addressed by Education Section personnel during 1983. Wildlife Management Educators presented 147 boating safety programs and 366 hunter safety programs before combined estimated audiences of over one million persons.

Office of Management and Finance

Administered by the department undersecretary, the Office of Management and Finance is instrumental in the implementation of programs and acquisition of equipment by all divisions of the Department of Wildlife and Fisheries. There are four sections within this office: Fiscal, Personnel, Computer, and Building and Services.

Fiscal Section

The Fiscal Section is responsible for the financial system of the entire department, including fiscal reports, budget, accounts payable, payroll, federal aid, purchasing, property control, auditing, commercial and sport license sales and records, and motorboat registrations and records.

During 1983, the accounts payable section issued 24,758 checks, while 25,409 paychecks were processed by payroll. The purchasing section processed 17,494 requisitions, purchase orders and release orders during the same period.

Total motorboat registrations during 1983 totaled 302,309. New registrations totaled 38,588; transfer applications 17,145; renewal applications 55, 545 and the number of boats canceled due to failure to renew totaled 31,164.

The Department of Wildlife and Fisheries received revenue in the amount of $35,838,313 for 1983. Monies collected were credited to the following funds:

Conservation Fund	
Taxes	$ 1,960,083
Royalties	7,939,970
Rental of Land	910,310
Bonuses on Land	492,413
License sale	7,450,039
Miscellaneous	41,487
	$18,884,302
Rockefeller Refuge Fund	
Royalties	7,932,508
Interest	3,279,550
Other Income	1,365,682
Marsh Island Fund	
Royalties	$ 386,338
Interest	765,167
Other Income	244,423
	$ 1,395,928
Federal Funds	$ 2,731,688
Interagency Transfer	88,544
L.O.O.P.	160,111
Revenue Grand Total	$35,838,313

The department's budget for 1983 totaled $34,127,854 with funds allocated to departmental divisions as follows:

Office of Secretary		
1.7%	Executive	$ 580,174
1.2%	Communications	409,534
25.6%	Enforcement	8,736,731
7.5%	Fiscal, Personnel, Services	2,559,589
2.1%	Computer	716,685
3.0%	Information and Education	1,023,836
Office of Wildlife		
.2%	Administrative	68,256
11.4%	Fish	3,890,575
13.1%	Fur and Refuge	4,470,749
14.1%	Game	4,812,027
Office of Coastal and Marine Resources		
.3%	Administrative	102,384
1.1%	Aviation	375,406
18.3%	Seafood	6,245,397
.4%	Ecology	136,511
		$34,127,854

Personnel Section

The computer terminal which was placed in the Personnel Section in mid 1982 to allow personnel data, including adjustments in annual and sick leave, to be entered directly into the department's new computer is now being used exclusively for personnel data. Leave records were entered into the U.P.S. (United Payroll System) in July 1983, and are constantly updated. Internal controls are maintained to insure accuracy of the Leave Records. A Kardex filing system remains operational for the maintenance of service records for the department's 831 employees.

In 1983, the Maintenance part of the Marine Maintenance and Communications Section in New Orleans, was closed, which resulted in a layoff. Some of the individuals affected by the layoff were placed in comparable vacant positions within this Department which minimized the adverse effects of the layoff.

Massive changes were made in personnel records to correspond with information on U.P.S. and F.A.C. (Financial Accountability Control System).

Job descriptions were reviewed for each position within this Department in an effort to determine the need for new job descriptions.

The personnel section is now responsible for mailing time attendance reports to all employees, receiving completed reports, checking reports for accuracy and transmitting to U.P.S.

This section assists in participation by employees in formal in-service training programs which are designed to improve employee performance capabilities. Various publications pertaining to effective supevision and management are currently under subscription, and many employees have participated in functional training courses offered by institutions and organizations outside the department.

Future progress toward the ultimate goal of complete and comprehensive personnel management and training will, of course, be contingent upon the availability of funds and supporting personnel to implement and sustain additional programs which will enhance the quality of employee services to the state.

Computer Center

During 1983, the Computer Center designed and implemented several very important and viable new systems for the Department. Among these programs were the Vehicle Maintenance System, Enforcement Case Reports and Evaluation Systems, Alligator Information System, Accounts Payable Zero Balance System, Louisiana Conservationist System, Bobcat and Otter Study System, Hunter Safety System, Acres for Wildlife System and the Striped Bass System.

The Bank Reconciliation and Accounts Payable Systems were re-designed, and major modifications were made to the Motorboat and Commercial License Systems.

System designs in progress at the end of the year include the Endeco and Personnel Programs.

Building and Services Section

This section serves the important function of building maintenance for the Wildlife and Fisheries offices located in Baton Rouge and New Orleans. It also provides services to departmental personnel including, but not limited to, handling the department ingoing and outgoing mail; distribution of office supplies statewide; and volume copying of books and publications. The Baton Rouge office of this section is seeking to expand its printing operation, thereby allowing divisions to have certain types of printing done in-house.

Office of Wildlife

The Office of Wildlife, supervised by one of two assistant secretaries reporting directly to the department secretary, oversees the state's wildlife and fisheries resources. The office comprises three divisions: Fish, Game, and Fur and Refuge.

Fish Division

Louisiana's vast fishery resources are vital to the state's economy from the standpoints of both recreation and commerce. The Fish Division is responsible for managing, protecting, conserving and replenishing those resources, and for controlling undesirable aquatic vegetation that hampers fisheries management, navigation and fisherman access in Louisiana waterways.

Certain of the division's programs that deal with sport fish restoration (research, survey, development and technical assistance) are funded wholly or in part through the Dingell-Johnson federal aid program.

The division is made up of two sections: Fisheries, and Aquatic Plant Research and Control.

Fisheries Section

The objective of the Fisheries Section is to manage fish populations and habitats for the preservation and improvement of sport and commercial fishing, located primarily in freshwater areas of the state. Activities include:

Lake Management Project In 1938, under this program, 22 lakes were sampled with rotenone to determine fish structure and pounds of fish per acre. From those data, management plans and recommendations for harvest regulations are formulated. Recommendations for lake drawdowns comprised 8,775 acres in 1983, increasing potential fishing efforts from 193,050 to 231,660 for an economic value gain of $772,200.

Farm Pond Extension Program Fisheries biologists provide advice and technical assistance to pond owners, and fingerling largemouth bass and bream are furnished to pond owners who meet requirements for stocking. In 1983, advice was given for 2,654 ponds comprising 6,740 acres. Largemouth bass and bream were stocked in 1,769 of those ponds totaling 4,346 acres.

Fish Hatchery Program Three state-owned fisheries, comprising 50 acres, produced 280,278 largemouth bass fingerlings, 1,109,505 bream, 4,320 crappie, 146,594 striped bass and 142,842 hybrid striped bass for stocking in public water bodies and farm ponds. Additional fish were provided through cooperative arrangements with the Federal Fish Hatchery in Natchitoches.

Florida Bass Program Some 50,000 fingerlings were released in Cross Lake and 15,500 in the Tangipahoa River to replenish the trophy-size Florida largemouth bass so popular with Louisiana fishermen.

Striped Bass Program The striped bass program is designed to control shad populations in the state's reservoirs and oxbow lakes while providing a highly desirable sport and food fish. During the year, 603,538 striped bass fingerlings and 543,397 striped bass x white bass hybrids were stocked in 18 lakes statewide and 120,694 striped bass fingerlings in coastal streams.

Grass Carp (White Amur) Monitoring Program In cooperation with the LSU Cooperative Fisheries Research Unit, the Fisheries Section monitors the invasion and spread of grass carp in Louisiana. Reproduction of grass carp has been occurring for several years in the lower Red and Atchafalaya rivers. Larvae were again collected and identified in 1983. In addition, four fingerlings were collected in the Black River near Jonesville and one subadult was found in Henderson Lake in the Atchafalaya Basin.

Fish Kill Investigation Fisheries biologists were called upon in 1983 to determine the cause of approximately 100 fish kills statewide. Kills found to be natural die-offs were investigated as to cause and, when feasible, recommendations were given to correct the problem. Kills caused by pollution were reported to the Department of Natural Resources.

Boat Ramp Maintenance The Fish Division inspects and maintains 41 department boat ramps located throughout the state and used by the public.

University Cooperative Agreements The Fisheries Section conducted research projects in 1983 in cooperation with three universities. They were Louisiana State University, studying natural reproduction of grass carp and striped bass as well as age and growth patterns of catfish; University of Southwestern Louisiana, investigating improved techniques in pond culture of crawfish; and Auburn University, researching the identification, diagnosis and treatment of fish diseases and parasites.

Commercial Fish Farming Extension Program Commercial fish farmers, principally crawfish and catfish farmers, benefited during the year from assistance and technical advice provided by Fisheries Section biologists.

The LSU Extension Service estimated that 100,000 acres of commercial crawfish ponds or lakes were in production in 1983, yielding a crop of approximately 40 million pounds. Crawfish farms covering 15,000 acres were assisted by the Fisheries Section with a total estimated benefit to farmers of $7.5 million.

Catfish farms totaling 1,550 acres produced a crop of 2.3 million pounds. Fisheries biologists aided farms covering 1,200 acres with a consequent benefit to farmers of $1.8 million.

Special Studies Fisheries Section personnel made headway in establishing procedures whereby large numbers of flathead catfish fingerlings can be produced for stocking in lakes with stunted or overcrowded bream and shad populations. During the year, the first fingerlings were produced, and small stockings were placed in Bayou Des Glaises and Bayou Teche. Increased stockings are projected for future years.

Among other study programs, the effectiveness of specialized commercial fishing gear on the harvesting of catfish is being investigated. Currently under evaluation is the use of specially designed wire baskets.

Aquatic Plant Research and Control Section

This section maintains a statewide program for control of water hyacinths, conducts research on methods of controlling troublesome aquatic plants, and provides advice and technical aid wherever needed.

Efforts to combat water hyacinth infestation were stepped up in 1983 with the application of herbicide to 62,634 infested acres of Louisiana's freshwater wetlands. That represents an increase of 15,129 acres over 1982, and 23,689 acres over 1981. Helicopter applications of herbicide in 1983 accounted for 11,696 acres, while ground crews using boats, airboats, mudboats and roadside spray units treated the remaining 50,938 acres.

Offsetting that campaign, however, conditions favorable to water hyacinth growth have prevailed. As a result of accelerated seed germination, two consecutive mild winters and high water, 567,650 acres of infestation was recorded in 1983, compared with 434,200 acres in 1982 and only 340,250 acres in 1981.

During the year, limited applications of specialized herbicides were used to relieve unusual and severe infestations of aquatic weeds in Bayou DeSiard, False River, Lake Bruin and Black Lake. The applications were a temporary measure and served to familiarize local residents with the safe and effective use of herbicides.

Other than herbicides, researchers scored gains in their search for means of controlling water hyacinth through insects and diseases. In a development considered promising for the future, they have established populations of two species of water hyacinth weevils and an overwintering population of the water hyacinth moth.

Also undertaken in 1983 was a program to halt the encroachment of water elm and swamp privet into the lakebed of Catahoula Lake. Altogether, 5,470 acres were treated and returned to producing waterfowl food.

Game Division

The Game Division is responsible for preserving maintaining, developing and, where feasible, increasing

Louisiana's wildlife resources. It is divided into these sections: Development, Research, Upland Game Studies, Animal Control, Forestry, Heavy Equipment, and Maintenance.

Most activities are funded through the Pittman-Robertson federal aid program, the exceptions being land acquisition, animal control and carpentry work.

Development Section

Wildlife Management Areas The Department of Wildlife and Fisheries now operates 38 wildlife management areas (WMAs) comprising 992,000 acres of which the department owns 556,700 acres. In 1983 the WMAs accommodated more than a million trips by hunters, fishermen, boaters, campers, birdwatchers and other lovers of the outdoors.

Two significant tracts of forested land were added to the system during the year—the Sherburne and the Tensas tracts. The Sherburne WMA, consisting of 10,232 acres in the Atchafalaya Basin, was purchased for $12,279,516. It has excellent deer, squirrel and rabbit populations, and contains some of the best woodcock wintering habitat in the state. The Big and Little Alabama bayous offer good sport fishing prospects.

The Tensas tract consists of 14,711 acres in Franklin, Tensas and Madison parishes adjacent to the Tensas National Wildlife Refuge. The state acquired 9,823 acres for $9,577,883 and has an option on the remaining land at $15 an acre. Deer, squirrel and rabbit are the main game species while waterfowl and turkey resources can be developed. Good fishing potential exists if water quality can be improved.

District Activities For wildlife management and administrative purposes, the state is divided into eight districts, each with a district office, supervisor, and biologists and technicians who are assigned to wildlife management areas or work throughout the district.

Typical of the numerous activities are managing deer hunts on WMAs, answering animal nuisance calls, providing technical assistance, conducting control burns, trapping and banding waterfowl and turkey, conducting a fur animal census, conducting deer range surveys, checking hunter bags, and meeting with civic and hunting groups.

District work is coordinated on the state level to provide data for better management of important wildlife species.

Research Section

The Research Section gathers data on game birds and animals, largely for use in formulating hunting regulations. Separate programs monitor the population of doves, deer, waterfowl, turkeys and upland game birds. Hunters are surveyed by mail as a means of estimating the annual harvest of various species.

Doves The Research Section has prepared a questionnaire to be sent to 840 randomly selected dove hunters throughout the state to determine how well they liked last year's compromise regulation on shooting hours.

The 1983 regulation allowed all-day dove hunting except on opening weekends of each season segment when shooting hours were restricted to noon until sunset.

Prior to 1980, dove regulations confined hunting to afternoons only. Then for the three years 1980-82, all-day dove hunting was permitted throughout the season. That bought complaints from those who preferred afternoon-only hunting, and the 1983 regulation was put into effect in an attempt to satisfy all parties.

Turkeys During the year, the Research Section inspected and evaluated an additional 19 areas in its ongoing study of turkey habitat throughout the state. The data will help determine whether present seasons and management strategies are appropriate and if restocking should be considered.

To improve the efficiency of turkey restoration and restocking activities, continued efforts to evaluate past turkey releases were made in 1983 and six additional areas evaluated.

Turkey trapping for the year was considered only fair. A total of 112 birds were released during statewide restoration operations. Although the turkey trapping effort was consistent with previous years, the relative lack of success was believed due to the bumper crop of mast produced the previous fall.

Waterfowl Louisiana, with its vast coastal marsh, winters more waterfowl than any other state, and annually some 125,000 hunters harvest two million ducks. Aerial surveys in 1983 indicated an increase in wintering waterfowl over 1982 population levels, and no flooding problems were encountered during the year.

A zoning experiment to determine Louisiana's alignment in the central or Mississippi flyway was completed with the banding of approximately 80,000 ducks. Results showed that 65 percent of the dabbling ducks and 61 percent of all the ducks banded arrived by way of the central flyway.

The U.S. Fish and Wildlife Service approved Louisiana's request that restrictions on the harvesting of canvasbacks be lifted, and hunting of the species again became legal statewide during the year. Several areas of the state had been closed to canvasback hunting since 1972.

Deer Biological data essential to the state's deer programs were compiled at wildlife management areas during managed hunts open to the public. At 18 major deer areas, biologists at daily check stations studied 2,119 deer kills by 38,543 hunters.

Veterinary health surveys were conducted in five herd areas —one each in Point Coupee, Tangipahoa and West Feliciana parishes and two in East Feliciana. In-depth studies focused on deer herds in the Tensas National Wildlife Refuge and in a representative region of numerous hunting clubs within industry-owned, pine-

hardwood uplands in Union Parish. The surveys were made in conjunction with the Southeastern Cooperative Wildlife Disease Study.

Deer study work in 1983 included refinement and continuation of a new research project on illegal spotlighting of deer from public roads. The study involves the use of lifelike deer silhouettes with reflective eyes, placed in suspected night-hunting areas. Biologists monitor the response of motorist-poachers and collect a variety of data on this persistent problem. The material will be analyzed by the LSU Department of Experimental Statistics for possible expansion into a statewide project.

Upland Game Studies Section

Acres for Wildlife Participation in the Acres for Wildlife habitat improvement program increased in 1983 by 12 percent over the previous year. A total of 657 landowners enrolled 498,917 acres in the program, 15 percent more land than was enrolled in 1982. Program biologists inspected land, prepared management plans, provided planting materials for participants, and made presentations to youth, civic and sporting groups.

Quail Food plots totaling 450 acres were planted in upland game areas, and additional acreage was bush-hogged, disced or control-burned by department personnel. Technical assistance was provided to landowners and lessees interested in managing for quail. The fall whistling census project originally restricted to the Fort Polk Wildlife Management Area and adjacent forested lands was expanded into a 49-route, statewide survey.

Pheasant Spring cock-pheasant crowing counts in 1983 indicated that the pheasant population in the Lake Arthur release area continued to expand while the population in the Florence release area seemed to be associated with an isolated block of marsh. The latest release area below Sulphur was not intensively sampled because a future release was still scheduled. Reproduction was, however, documented on that site, and reports of reproduction from local residents were received for the other two areas.

Oaks for Wildlife Acorns collected by department personnel, private individuals and conservation groups were delivered to the Office of Forestry nursery in Columbia, thus providing some 20,000 seedlings. In addition, staff personnel collected 33,000 wild oak seedlings to supplement the nursery stock. Seedlings then were distributed to private citizens and wildlife management personnel for planting.

Animal Control Section

During 1983, the Animal Control Section received 319 requests for aid from landowners. Beaver damage accounted for 42 percent of the requests and coyote damage for 31 percent. Nuisance animals removed at landowner request included 136 beavers, 100 coyotes, 35 domestic and feral dogs, 33 opossums, 21 raccoons, nine nutria, seven red foxes, three skunks and a gray fox. Permits were issued to 27 landowners enabling them to control nuisance animals on their land.

During alligator season, three trappers were assigned to Black, Saline, Iatt and Vernon lakes to collect data. Trapping clinics were held for interested landowners.

Forestry Section

Forest management plans were completed during the year for the Ouachita Wildlife Management Area, Loggy Bayou WMA and Red River WMA. Preliminary work, including timber cruising and typemapping, was done at the Red River WMA. In addition, about 350 acres of planted hardwood at Red River was marked and thinned by injection.

Heavy Equipment Section

Road repairs and maintenance work were performed during the year at 17 wildlife management areas. At those heavily damaged by winter-spring flooding, complete road beds had to be rebuilt in some places, with gravel or clamshell applied to the surface. Flood damage was especially severe at the Russell Sage, Ouachita, Saline, Three Rivers, Red River, Boeuf and Grassy Lake WMAs.

Maintenance Section

In addition to building maintenance, renovation and small construction jobs carried out at department-owned installations throughout the state, the Maintenance Section in 1983 completed extensive remodeling of administrative office facilities now centralized at the Bon Marche mall in Baton Rouge.

Fur and Refuge Division

The responsibilities of the Fur and Refuge Division can be divided into three major categories: research, resource management, and land management of a number of the department's refuges and wildlife management areas.

Research

Areas of research of the Fur and Refuge Division in 1983 included statewide alligator research, statewide furbearer research, marsh ecological monitoring, alliga-

tor farm research and extension work, Canada geese and brown pelican conservation programs, estuarine fisheries research, pond culture studies, and research directed towards conservation of division managed property.

Fisheries Of the estuarine fisheries research, pond studies of giant Malaysian prawn yielded the most encouraging results with yields from post larvae ranging up to 700 lbs/acre. The cooperative striped bass project, with the Fish Division, resulted in 116,139 fingerling stripers being stocked in the Mermentau River in 1983. As a result of this ongoing project, sport fishermen of southwest Louisiana have reported catching stripers up to 21 pounds. Growth and movement studies of the commercially important channel and blue catfish were continued in 1983.

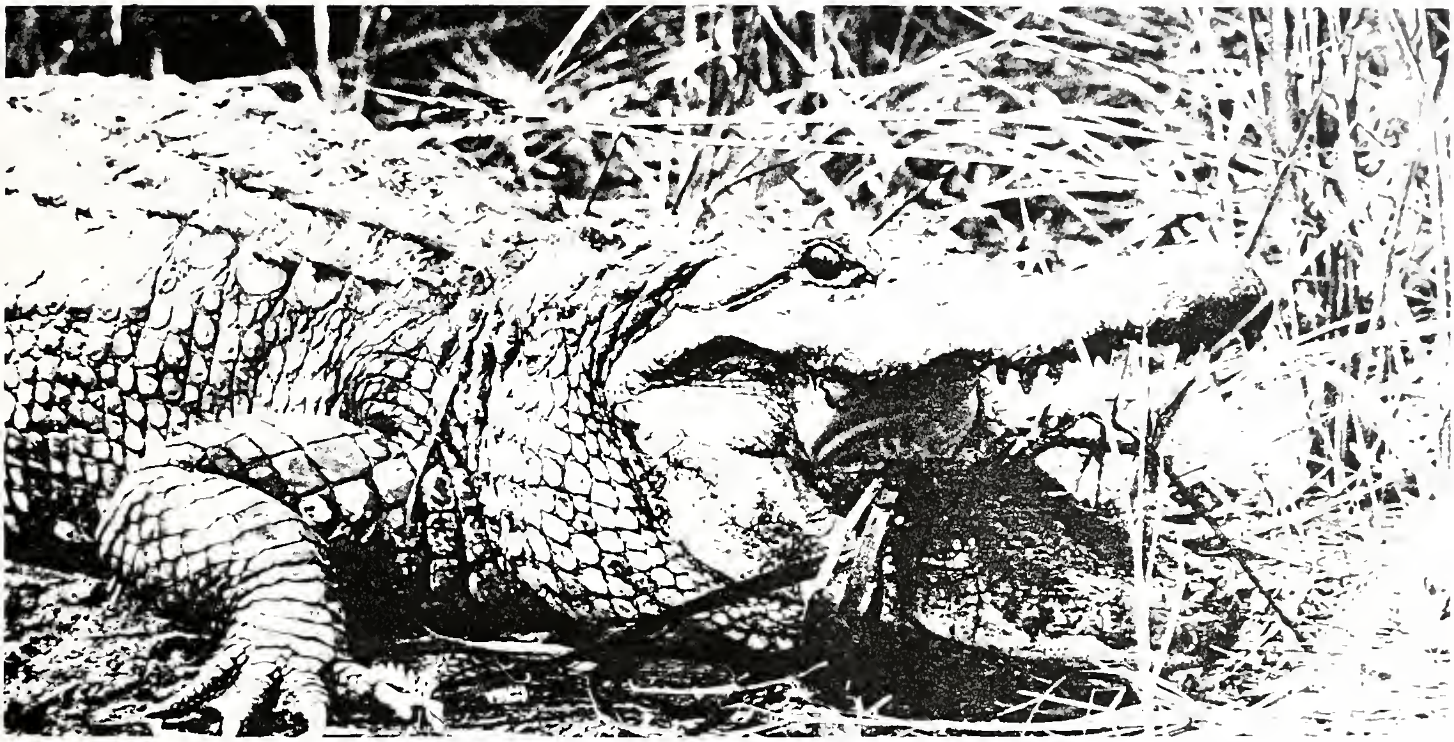
Alligator Alligator research involved pen studies, egg incubation and short-term rearing of young in controlled environmental chambers, and specialized laboratory study of blood, hormones and tissue samples. Reproductive success in 1983 for pen alligators exceeded that for wild populations — the first time this has been accomplished for captive crocodilians.

Nutria With the nutria being the backbone of the Louisiana fur industry, top priority was being given to continued and accelerated research on nutria in 1983. Current research has concentrated on reproductive biology, population densities, blood chemistry and genetic diversity. Publication of reproductive data is planned during 1984.

River Otter Data on the section's river otter telemetry project was coded during 1983 and the analysis and final report will be completed in 1984. A paper entitled "A Live Trapping and Handling Technique for River Otter" was presented at the 1983 Southeastern Association of Fish and Wildlife Agencies. River otter life history study continued, with lab work conducted to compile reproductive data and prepare pesticide samples for analysis. A cooperative effort is underway with the U.S. Fish and Wildlife Service to relate reproductive performance to pesticide residues.

Muskrat A total of 220 muskrats were live-trapped in Cameron Parish during January and February 1983 and were sexed and tagged. One hundred of these were released near the Audubon Refuge Headquarters and 120 were released on Marsh Island. Unusually high spring tides occurred for three weeks after these releases and mortality rates for the released muskrats were very high. Future attempts should involve stocking in early winter rather than late winter or spring to avoid high tides.

Bobcat Two biologists spent approximately 75 percent of their time in 1983 with work on the ongoing bobcat telemetry study. Data were coded and plots of home ranges are being analyzed, with a final report expected in 1984.



Statewide Scentpost Survey Five years of scentpost data were compiled and a paper was presented at the Southeastern Association of Fish and Wildlife Agencies. The sixth annual survey was completed in October 1983 and it was decided that the survey would be continued for at least five more years.

Canada goose Approximately 400 goslings were produced from the Rockefeller Refuge Canada goose flock in 1983. They were allowed to stay with the flock to help build up the breeding nucleus. Hopefully, additional birds can be added to five satellite flocks, and new flocks can be initiated around the state.

Brown pelican Approximately 900 brown pelicans were fledged at the two colonies at North Island and Queen Bess Island.

In addition to the research of Fur and Refuge Division personnel, the division provides funding to the Louisiana Cooperative Wildlife research unit at LSU in Baton Rouge and for numerous other university research grants. This funding has provided additional short-term studies that are probably some of the most productive research projects in the department. Additionally, 100 scholarships in the amount of $1,000 each were available in 1983 for university students through the Rockefeller fund.

Resource Management

The Fur and Refuge Division has the responsibility of managing the fur and alligator resources of the state. The division's overall goal is to maintain or improve the resource base while allowing optimum utilization.

The 1983 alligator season was very successful with 16,126 alligators harvested by 1,050 hunters. Prices received for hides averaged $12.50 per foot.

Interest in alligator farming continued to increase with four farmers going into business during 1983, bringing the state total to 12 alligator farm operations. Rockefeller Refuge distributed 5,500 young alligators to nine farms in 1983 for breeding stock.

Harvest data for the 1982-83 trapping season showed over 1.3 million pelts taken for a total value of roughly $5.5 million. These figures are down again from the previous season, the drop due to lower pelt prices because of world economic conditions and because of particularly cold winter weather in Louisiana which decreased the quality of the pelts.

Land Management

Management practices employed on the refuges and WMAs under the Fur and Refuge Division are primarily directed towards improving wetlands for resident and migratory waterfowl. The multiple-use management concept is used wherever feasible so that many other aquatic-based animals, including furbearers, fish, and resident game and nongame birds, also benefit from the management.

Rockefeller Refuge The state-owned Rockefeller Refuge, located in Cameron and Vermilion Parishes,

comprises some 85,000 acres of prime coastal marshland. Impoundments varying in size from 480 to 5,680 acres have been constructed on the refuge to house the over 400,000 waterfowl that spend the winter on the area each year. Year-round residents including nutria, muskrat, raccoon, otter, mink, deer, and alligator are in good numbers on the refuge.

During 1983, major repairs were initiated on the headquarters complex. A new workshop and new West End dormitory are being constructed and residences 1 and 2 are being completely renovated. In addition, two major repair contracts have been approved for water control structures on the refuge that, when completed, will significantly add to the enhancement of approximately 30,000 acres of prime waterfowl habitat.

The deed of donation of Rockefeller Refuge underwent several significant changes in 1983. A major change allows surplus revenues above the operational budget for the refuge to be used for the state land acquisition program. This is a major boost for efforts to purchase wildlife habitat statewide. The Rockefeller deed was also changed to abandon the permit requirement for visitors to the refuge.

Pass-A-Loutre Waterfowl Management Area This 66,000-acre marshland lies at the mouth of the Mississippi River in Plaquemine Parish. The entire delta system in which it is located has been experiencing significant marsh loss over the past fifty years. Several innovative marsh creation projects are presently underway to help curtail marsh loss. They include: 1) utilization of man-made canals to direct sediments into subsided areas to create marsh, 2) use of synthetic materials to capture sediments and keep them from being transported out to the open gulf, and 3) use of petroleum access canals and spoil levees to enhance sedimentation processes.

Salvador Wildlife Management Area Located in St. Charles Parish, Salvador WMA is 30,000 acres of fresh and intermediate marsh providing ideal habitat for waterfowl. The area has a sizeable deer herd and is a major catfish producing area. An annual catfish tagging study has produced valuable information concerning the fisheries movement patterns within the Lake Salvador-Lake Des Allemands complex.

Point-Au-Chien Wildlife Management Area This area, in Terrebonne and Lafourche Parishes, is composed of 30,000 acres of fresh to brackish marsh. The area provides habitat for waterfowl, but is gradually changing to a more saline environment conducive to marine organisms. In addition to increased salinities, the area has experienced extreme marsh loss in recent years. Projects have been proposed to offset this significant marsh deterioration process. The Montegut Project will place some 3,500 acres of deteriorating marshland under water management which will ultimately enhance wildlife and fisheries resources of the area. The St. Jean Charles Project and the Grand Bayou Project will provide similar management for 4,500 acres each, and the Bully Camp Project will allow for management of a 1,000 acre area.

Office of Coastal and

The Office of Coastal and Marine Resources, headed by one of two assistant secretaries reporting directly to the Secretary, manages the seafood resources and waterbottoms of the state. This Office has a statutory mandate to "perform the functions of the state relating to the administration, operation, and law enforcement of programs, including research, relating to oysters, waterbottoms, and seafood, including but not limited to the regulation of the oyster, shrimp, and marine fishing industries, the leasing of and regulations of the use of waterbottoms for cultivation and propagation of oysters, and the dredging of shells, sand, gravel, and fill materials, the regulation of seismic operations, the licensing of vessels engaged in the industry, establishing and maintaining oyster seed grounds, the control of the shrimp fishery and shrimp industry in the state and the licensing of persons engaged therein, and the collection of the severance tax on shrimp and oysters, and royalties on shells, sand, gravel, and fill materials severed from the state water bottoms."

This Office is composed of the Ecological Studies Section, the Aviation Section, and the Seafood Division. The Seafood Division is divided into nine distinct sections: Administration Section, Lyle S. St. Amant Marine Laboratory, Fisheries Management Section, Oyster Lease Survey Section, Seismic Section, Hydrological Management and LOOP Section, Coastal Use Permits Section, and Fish Kill Section. The Ecological Studies Section evaluates and comments on Section 10 and Section 404B permits issued by the Corps of Engineers, administers the Scenic River System of the state, comments on various environmental impact statements for projects throughout the state, and serves as a clearinghouse for information for endangered and threatened species of the state. The Aviation Section consists of three full-time pilots who play an important role in the department's law enforcement work, inventories of wildlife, monitoring various activities in coastal areas, and in surveys of ranges.

1983 was characterized by redirection of some of the Office's efforts in order to address developing issues, and by environmental perturbations which had severe impacts on the fisheries. These perturbations, in the form of large amounts of rainfall at inopportune times, affected production of most of the coastal fisheries, and resulted in the closure of large amounts of oyster growing areas because of high levels of coliform bacteria resulting from heavy rainfall and runoff in local watershed areas as well as two major flood periods for the Mississippi and Atchafalaya Rivers. The Office re-evaluated its programs in order to address several issues more completely, including an expansion of effort in the management of finfish (particularly redfish and speckled trout) and increased efforts in the regulation of shell dredging.

Continuing and increasing controversy over the nature and impact of commercial finfisheries, particularly those affecting speckled trout and redfish, resulted in an attempt to set up a section within the Seafood Division specifically charged with studying and managing these resources. In early 1983, a Department Task Force completed a review of the information available for these two species. A bill was introduced in the Legislature which would have funded a new section, devoted to the management of coastal finfisheries, through the creation of a new saltwater recreational fishing license; this bill failed to pass the Legislature. The Governor subsequently directed the Department to reassess its priorities and to increase efforts in coastal finfish management. As a result of the review paper, it was determined that the information most needed was a coastwide creel survey of coastal recreational finfishermen. As the year drew to a close, the division was conducting a pilot study to finalize the design of a survey scheduled to begin in January, 1984.

Late in 1983 the Governor created a Finfish Task Force comprised of representatives of all elements interested in the resource, i.e., commercial fishermen, recreational fishermen, finfish processors, restaurateurs, consumers, university researchers, the WLF Commission, and the department. This task force was charged with reviewing previous research and management activities, with reviewing the bill previously submitted to the Legislature, and with trying to effect a compromise between interested parties so that rational management activities of the coastal finfisheries could proceed.

Shell dredging has been occurring in Louisiana's coastal waters since the early 1900's. Prior to 1944, few restrictions were placed on the shell dredging industry. However with the growth of Louisiana's oyster industry, the Wildlife and Fisheries Commission began restricting shell dredging to areas in which significant oyster production did not occur. Shell dredging was then eliminated from the major portion of coastal Louisiana. Conflicts with other user groups, such as the crab fishermen of Lake Pontchartrain and Lake Maurepas, resulted in additional restrictions to minimize such incidents, and in the development and distribution of information to the fishermen showing zones and time periods for the next annual dredging activities. This allows crabbers to move their traps to the more favorable areas during preferred periods while preventing or reducing damage to traps from dredging activities.

A significant controversy developed in 1982 and continued in 1983 as environmentalists began to claim that shell dredging activities were damaging Louisiana's coastal environment, and were affecting the productivity of Louisiana's coastal fisheries. The Office exerted considerable effort in documenting the long history of its regulatory procedures, and in investigating complaints and rebutting charges. Shell dredging has been occurring along the Louisiana coast for over 60 years; there is no substantial evidence that the fishing industry had been detrimentally affected.

Recognizing that many of the problems of the seafood industry are economic in nature, and that a comprehensive seafood promotion and marketing effort would have a beneficial impact on the seafood industry, the Legislature created the Louisiana Seafood Promotion and Marketing Board within the Department of Wildlife and Fisheries. This board was convened in 1983; it is appointed by the Governor from names submitted by prominent Louisiana fisheries organizations. It has regulatory powers, and will plan and conduct a campaign for advertising, publicizing, and promoting the increased consumption of Louisiana seafood. The board began operations in 1983 as a result of a grant from the Gulf and South Atlantic Fisheries Development Foundation, Inc. and staff support from the Department. Once it secures sufficient funding, the board is empowered to make loans to residents for "purchase, constructions or necessary improvement of any equipment, machinery or structure used in the catching, harvesting, processing or packaging of seafood in Louisiana." The Board may also underwrite or guarantee loans from lending institutions for that purpose. By the end of 1983, the Marketing Board had made good progress toward the development of an advertising campaign; however, it had not secured funding in amounts which would allow it to make or secure loans to the industry.

Ecological Studies Section

The Ecological Studies Section is a federally funded section under the Dingell-Johnson and Pittman-Robertson Acts. Many of the duties and responsibilities of this section are set forth in the technical assistance, research and survey agreement Federal Aid Project FW3 entitled "Statewide Environmental Investigations."

The following is a summary of the activities of the ecological studies section by job category.

Study I: Environmental Investigations, Technical Assistance

Job I-1: Corps of Engineers Projects: Technical assistance in matters pertaining to fish and wildlife conservation and habitat value assessment, preservation, mitigation and compensation. Assistance was rendered to the U.S. Army Corps of Engineers during the planning for and consideration of various projects.

Job I-2: U. S. Department of Agriculture: Technical assistance is offered to the Soil Conservation Service and the U. S. Forest Service concerning native fish and wildlife species and the potential effects actions of these two agencies will have on those species.

We have worked closely with the U.S.D.A. on several projects during the past year. Those projects were: 1. Bayou Mallett Water Shed (W.S.); 2. Upper Vermilion W.S.; 3. Lake Verret W.S.; 4. Cameron-Creole W.S.; 5. Bayou Plaquemine Brule W.S.; 6. Mill Haven W.S.; 7. Village of Brusly Drainage Project; 8. Fifth Ward W.S.; 9. Walnut-Roundaway W.S.; 10. several RC&D projects.

Job I-3. Assisting other agencies: There are several other agencies, federal, state and local, as well as private individuals and companies to which we render technical assistance. The assistance is rendered either through direct one on one contact or via service on several commissions and advisory panels.

Job I-4. Permitting of Various Governmental Agencies: Personnel of the Ecological Studies Section are involved in the review of or the issuances of several types of State and Federal Permits. These include U.S. Army Section 10 and 404 Permits, State Coastal Use Permits, NPDES waste water discharge permits, air emissions permits and permits for disposal of hazardous and solid wastes. The latter four types of permits are issued by the Environmental Control Commission (ECC) of which we are a member.

The ECC meets monthly and has, in the past year, issued several hundred solid waste permits, interim permits, compliance orders or closure orders. The ECC permitted several waste water discharge and air emission permits and ordered one hazardous waste site closed. In addition, the Commission held several public and adjudicatory hearings to address Hazardous Waste Disposal Permits or to adjudicate contested permit applications.

The Section reviewed and commented upon approximately 2500 404-Section 10 Permit applications and approximately 1500 Coastal Use Permit applications.

Job I-5: Scenic Rivers Permitting: The Ecological Studies Section is responsible for the receipt, review and final disposition of permits for activities occurring on or adjacent to our natural and scenic streams. Our scenic rivers system is the second largest system of its kind in the United States.

During 1983, we received 19 applications, issued 20 permits and denied one.

Other duties of the Ecological Studies Section include river and stream ecological surveys and endangered species conservation.

During 1983 many endangered species consultations were accomplished, however no stream surveys were conducted due to time, equipment and personnel constraints.

The overall mission of the section was accomplished during 1983, however much more could have and should have been done in several areas of our responsibility. Those other goals cannot be completely realized without some expansion of the section which includes additional biologically trained personnel assigned on a full time basis and the equipment necessary to accomplish the tasks.

Seafood Division

Administration Section

The Administration Section controls the budgetary, personnel, and policy functions of the Division. Its technical and administrative personnel also perform various management and research activities. A major event occurring during the year was the relocation of this section from New Orleans to Baton Rouge in response to recommendations made by the Governor's Cost Control Commission. This resulted in the loss of all clerical personnel in the Section, and relocation of administrative and technical personnel.

The division provides technical expertise and representation on several commissions, committees, task forces, etc. During the year assistance was given to the Gulf of Mexico Fishery Management Council in the preparation of management plans for reeffish, mackerel, and coral. In addition, personnel reviewed and commented on several plans already in effect, including the shrimp, stone crab, and spiny lobster fisheries. Although these management plans are prepared by a council for the U.S. Fishery Conservation Zone, participation by the Office insures that the state's viewpoint is considered and that the management plans provide a regional approach to fisheries management for the benefit of the resource and the state. Technical personnel of the Office also sit on several committees of the Gulf States Marine Fisheries Commission, which is composed of the five Gulf States.

This section administers various permits to persons engaging in activities along the coast. Scientific Collecting permits are issued to researchers and for scientific and educational purposes; 76 permits were issued during the year. Also 22 Bait Dealer's permits were issued to commercial fishermen wishing to market bait shrimp between the spring and fall inshore shrimp seasons, and 42 Experimental Fisheries permits were issued to fishermen to harvest underutilized species or to assess the use of experimental gear.

Lyle S. St. Amant Marine Laboratory

The Marine Laboratory facility on Grand Terre Island has been in existence since the late 1950's. Although the direction and emphasis of research has changed over the years, the main function of the Marine Laboratory staff is to conduct applied research on economically important fish and invertebrates, and on important marine seafood problems. Results from these research efforts are used to help manage, improve, and/or protect our marine resources. The major activities of the laboratory during the year included:

1.) **Research**—Both long-range and short-term research projects are conducted by staff personnel to furnish data necessary for management, policy formation, and protection of our important seafood resources. Approximately thirty individual research projects are presently underway on such species as stone crab, blue crab, brown shrimp, oyster, clam, Gulf menhaden, Atlantic croaker, spot, spotted seatrout, red drum, sand seatrout, and black drum.

2.) **Monitoring**—As part of the Division's coastwide oyster monitoring program, oyster reproduction as measured by spat setting is continuously monitored. This data serves as an index of future oyster production on Barataria Bay reefs. Isohaline charts are complied from weekly salinity measurements taken at selected stations in Barataria Bay; this information is used in assessment of recruitment and other ecological parameters of several important marine species.

3.) **Extension**—Technical advice and extension services are provided to commercial fishermen. Five oyster complaints were investigated in 1983. In addition, the staff and facilities of the Laboratory are available for various educational activities; approximately fifteen junior/senior high school groups and conservation groups made field trips to the lab in 1983. Several collegiate "marine ecology classes" made overnight trips to the laboratory.

4.) **Miscellaneous**—Laboratory biologists represented the division on several committees, including the Lafourche Parish Coastal Management Committee, and at public meetings held for the U.S. Army Corps of Engineers freshwater diversion projects.

The major lab research undertaken in 1983, grouped by species included:

1.) **Oysters**—A special study began on the effects of 1983 floodwaters on oysters east of the Mississippi River-Gulf Outlet. This will be the first study to quantify both the adverse and beneficial effects of floodwaters on oyster production in this area. Existing monitoring activities allowed an accurate forecast to be made early in 1983 that production on the seed grounds would be poor; the forecast for 1984 indicates increased availability of seed in that year, particularly in the Lake Borgne-Louisiana Marsh area. Two research projects, begun in 1982 and continued in 1983 were: growth and survival of oysters in the Barataria Bay system in relation to environmental conditions; and optimum temporal and spatial cultch placement in the Hackberry Oyster Seed Grounds Reservation.

2.) **Menhaden**—Using previously established procedures a forecast was made of 1983 catches of age-1 fish by the Louisiana menhaden fishery. The accuracy of this projection will not be known until analysis of the 1983 catch is completed. A current project is determining menhaden bycatch in the shrimp fishery. Menhaden/shrimp ratios were obtained from wingnet data in the Calcasieu and Caillou Lake systems, from recreational trawl catches in Calcasieu Lake and Barataria Bay, and from statewide commercial trawl catches. The ratios obtained cannot be expanded to obtain statewide estimates of total menhaden bycatch taken by the shrimp fishery, but they do indicate that this bycatch is substantial.

3.) **Spotted Seatrout/Red Drum**—Otoliths and scale samples were obtained from about 250 red drum. The information gathered by the analysis of these fish parts will be used to determine age and growth information for this species. Two major research projects were begun in 1983. The first is a monitoring project in which sampling is done at selected stations with seines and a small-mesh gill net for juvenile fish, and with larger-mesh gill nets for adults; the second is a creel survey of recreational fishermen in Barataria Bay. Distribution and abundance data obtained in the first project will be analyzed to determine the effect of environmental factors on year class strength.

3) **Shrimp**—A pilot study assessed the use of wingnets in determining the influence of environmental factors on the immigration of brown shrimp from Barataria Bay into the Gulf; an expanded study is planned for 1984. The effect of the opening of the brown shrimp season on inshore brown shrimp populations was monitored for the third straight year; results indicate that the opening date has an important influence on total annual brown shrimp landings.

The results of several completed projects were published in 1983. Reports published included:

1) Length frequency distributions, size and conditions of Gulf menhaden collected from three Louisiana reduction plants; by Richard Bejarano and Vincent Guillory.
2) Spawning peak of red drum *(Sciaenops ocellata)* in Southeast Louisiana; by Stephen Hein and Joseph Shepard.
3) Size, morphometric, and gonadal differences between inside and outside spotted seatrout *(Cynoscion nebulosus)* in Southeast Louisiana; by Stephen Hein and Joseph Shepard.
4) *Lernaenicus affixus* found to parasitize red drum, *Sciaenops ocellata;* by Stephen Hein and Joseph Shepard.
5) Comparison of oyster setting rates on clamshell and crushed limestone; by Mark Chatry, Charles Dugas and Gregory Laiche.
6) Food habits of black drum *Pogonias cromis,* in Southeast Louisiana with emphasis on their predation of the American oyster, *Crassostrea virginica;* by Charles Dugas.
7) Influences of environment and age structure on Gulf menhaden oil yield; by Vincent Guillory.
8) Hatchery spawning of the southern hard clam, *Mercenaria campechiensis,* in Louisiana by Gregory Laiche and Mark Chatry.
9) Growth and survival of *Macrobrachium rosenbergii* in brackish water; by Mark Chatry and John Roussel.
10) Suitability of three different tags for juvenile Gulf menhaden, *Brevoortia patronus;* by John Roussel and Vincent Guillory.

11) Salinity; A factor affecting fluctuations of spotted seatrout, *Cynoscion nebulosus*, stocks; by Joseph Shepard.
12) Optimum salinity regime for oyster production on Louisiana's state seed grounds; by Mark Chatry, Ronald Dugas, and Kirk Easely.
13) Seed oyster production in Louisiana and prospects for enhancement; by Mark Chatry.

Fisheries Management Section

Shrimp Early in 1983, hydrological and biological sampling indicated that shrimp production for the spring brown shrimp season would be below both 1982 and the long term average. Mississippi River stages were high; persistent spring rains reduced the optimum nursery habitat to about one million acres, considerably below the three million acres available in 1981 and the 1.5 million acres available in 1982. In addition, the cold water of river discharges and rains, and cold fronts suppressed water temperatures to below optimum range of growth.

The inshore season for the middle portion of the state (Zone 2) was opened on May 23. At the same time a special season was opened in the western portion of the state (Zone 3) to harvest a large population of white shrimp which had moved into the estuaries. This special season extended to May 27; it produced an estimated catch of 167,800 pounds of white shrimp which averaged 26-30 shrimp per pound. The fishermen received about $2.75 per pound for these shrimp. During the first 10 days of the brown shrimp season in Zone 2, a survey of selected dealers and processing plants indicated that the harvest of the opening week was as much as 50% below that of the two previous years; dockside prices, however, were among the highest of record.

The inshore season in Zone 1 (east of the Mississippi River) opened June 6. At this time the Bonnet Carre floodway was open; water temperatures were 3-4C below normal; salinities were very low. As a result, brown shrimp were concentrated in the outer marshes, lakes, and bays and were small in size. The inshore season in Zone 3 opened June 13. Heavy local rainfall significantly reduced salinities and caused a premature immigration of large numbers of brown shrimp from the estuaries to the offshore waters. Preliminary statistics indicate that the May-August inshore catch of brown shrimp was 12.1 million pounds, compared to 15.1 million pounds harvested in 1982 during that time period; offshore brown shrimp production west of the Mississippi River was 8.8 million pounds in 1983, compared to 17.9 million pounds the previous year.

A special five day extension of the brown shrimp season in Zone 1, for wing nets only, resulted in the landing of 70,500 pounds of 40-50 count shrimp; these shrimp sold for $1.85 per pound resulting in a gain of $130,425 at the dock as a result of this special season. In addition, Breton Sound remained open to shrimping between the brown and white shrimp season (July 27-August 15). This resulted in the catch of 1,573,000 pounds of 26-35 count shrimp having a value of $2.18 per pound for a total value of $3,429,140 at the dock.

The inshore white shrimp season opened statewide on August 15, as statutorially provided. Hydrological conditions across coastal Louisiana were improving prior to August 1; the hypoxic area in the Gulf of Mexico did not appear to cover as extensive an area, nor to persist as long, as in 1982. This lead to speculation that the white shrimp season would be better than that of 1982. However, during the first week of August, a slow-moving pressure system dumped large amounts of rain on coastal Louisiana. By late September, it was evident that white shrimp recruitment was not keeping pace with that of previous years. Preliminary landings information indicates that 10.8 million pounds of white shrimp (heads off) were landed in 1983. This was below the 11.8 million pounds landed in 1982 or the 17 million pounds landed in 1981. As a result of adverse hydrological conditions, the total Louisiana shrimp landings in 1983 will be below that of 1982.

Oysters As a result of record rainfall in December 1982, water levels of the Mississippi, Atchafalaya, and Pearl River Systems rose to above flood stages in January 1983, which was most unusual for that period of the year. This heavy rainfall overtaxed the sewage and drainage systems of some municipalities in the coastal areas, resulting in discharges of untreated sewage and surface runoff into the estuaries. This caused the closure of additional oyster harvesting areas as a result of high fecal coliform levels in January 1983.

Record rainfalls in April 1983 eventually led to the opening of the Bonnet Carre floodway on May 20 to relieve pressure on the Mississippi River levees. For a period of approximately 37 days, 250,000 cubic feet of water per second entered Lake Pontchartrain and flowed into Lake Borgne and the surrounding estuarine zone. In addition, large volumes of silt-laden waters breeched the lower east side of the Mississippi River levee at several openings from Bohemia to Baptiste Collette Pass near the mouth of the Mississippi River. This overflow deposited as much as 25 millimeters of silt over the natural oystr reefs of the area. Salinities were reduced to below tolerances of oysters resulting in significant mortalities. Studies indicated that in July all oysters in Lake Borgne were dead; high mortalities were observed in areas adjacent to the Mississippi River, in west-central Terrebonne

Parish and near the western edge of Marsh Island in Vermilion Parish.

Oyster production in Louisiana is heavily dependent on production of public oyster seed grounds east of the Mississippi River. The oyster mortality survey of mid-1983 indicated losses of over 240,000 sacks of seed oysters (1-3 inches in length) and 185,000 sacks of commercial size oysters (3 inches). This represents a loss of about 450,000 sacks of marketable oysters; in the 1982-83 oyster season the public reefs east of the Mississippi River produced about 1.5 million sacks of oysters. As fishermen were receiving about $10.00 per sack of oysters at the time, it is estimated that inordinate flood conditions of 1983 cost the fishery approximately 4.5 million dollars.

In 1983, large portions of the oyster grounds which were historically approved growing waters were closed to oyster harvesting by a joint declaration of emergency by the Louisiana Department of Health and Human Resources (LDHHR), Office of Health, and the Louisiana Department of Wildlife and Fisheries (LDWF). The initial closures were based on the fact that oysters from these areas were implicated in an unusually high number of reported gastrointestinal illnesses. Subsequent bacteriological data collected by LDHHR revealed that these waters were unsatisfactory for shellfish harvesting. A number of interagency meetings, involving representatives of LDHHR, LDWF, and the Louisiana Department of Natural Resources (LDNR) ultimately led to the initiation of a "Special Oyster Water Sampling Program" utilizing LDWF aircraft. The intent of this sampling program was to provide detailed information on the following: (1) the areal extent of the coliform and other contamination, (2) possible source areas of this contamination, and (3) trends in movement or dispersal of the contaminated water masses. This information was used to redefine the closed areas and review abatement measures which would minimize the economic impact of the closures on the Louisiana oyster industry.

Both the Sister Lake and Bay Junop seed grounds were opened during the 1983 calendar year. Sister Lake remained closed from November 20, 1982 through March 23, 1983 due to coliform bacteria counts which exceeded the National Standard of 14. On March 24, 1983, due to improving conditions, the lower ⅔ of Sister Lake was opened for the remainder of the 1982-1983 oyster season (season closes by law at sunset, April 1). During this time (March 24-April 1), 18,531 sacks of commercial oysters and 498 barrels of seed oyster were harvested. This brought the total for Sister Lake during the 1982-1983 season to 88,183 sacks of commercial oysters (which were for direct sale) and 45,965 barrels of seed. Of the totals, 41,674 sacks of commercial oysters and 22,309 barrels of seed were taken off the 1979 shell plant. This is the third year oysters were harvested off the 1979 shell plant. Since this plant was first opened to fishermen in September 1980, a total of 59,111 barrels of seed and 51,538 sacks of commercial oysters were harvested. Based on these figures for the $250,000 cost (approximate cost of the shell plant), fishermen have harvested $2.3 million worth of oysters for a return investment of 9.2 to 1.

On September 7, the Bay Junop oyster seed ground was opened for oyster fishing. Prior to the season, square meter samples taken in July indicated there were 22,258 sacks of commercial oysters and 6,464 barrels of seed in Bay Junop that would be available to the fishermen when the season opened. Fishing activity in Bay Junop was classified as heavy (greater than 20 boats) for the first ten days of the season, moderate (greater than 10 boats) through September 30, and low to sporadic (less than 10 boats from October 1 until the area was closed by the LDHHR, Office of Health, and LDWF on December 2, 1983. During the time the area was opened, a total of 26,798 sacks of commercial oysters and 835 barrels of seed were taken. As these figures indicate, the fishing activity in Bay Junop was skewed toward sacking as opposed to taking seed for planting. This has been the case since the 1975-1976 season when approximately 45% of the harvest was seed oysters. This is a function of several factors, one of which is the inability of the larger boats (which are used for planting) to work in the bay because of its shallow depth. This area was still closed to oyster fishing at year's end due to high coliform bacteria counts.

Production of sack and seed oysters east of the Mississippi River as determined by boarding reports were as follows:

January to March, 1983 - 79,020 sacks, 0 barrels;
September to December 1983 - state grounds (Bay Gardene excluded), 227,835 sacks and 48,010 barrels;
September to December 1983 - Bay Gardene, 60,278 sacks and 41,160 barrels.

Commercial catch for the 1983 season for Calcasieu Lake was approximately 50-75,000 sacks. This was below previous years, reflecting population losses (approximately 40%) of harvestable oysters from abnormally high salinity levels, high occurrence levels of disease and increased evidence of oyster drills during late 1982. Production normally reached 100,000 sacks in past years.

Two shell plants were conducted east of the Mississippi River: 33,220 cubic yards of shell sprayed over 649 acres in Black Bay and 6,583 cubic yards of shell sprayed over 154 acres in California Bay at Telegraph Point.

Approximately 3,000 cubic yards of limestone aggregate were sprayed in Black Bay. Spat had set by the last week of May and appeared in samples taken on the Black Bay Shell Plant on June 2, 1983. No spat were found afterward due to low salinities.

During the period of May 31 - June 12, a total of 19,527 cubic yard of clam shell was planted on a 400 acre site in the western portion of Sister Lake. Samples taken on the shell plant area during October indicated 70% of the shell material remained exposed with heaviest spat concentrations located in the mid-portion of the plant and the fewest in the northern portion. Additional samples taken in December confirmed those results.

Between April 18 and May 11, 1983 a total of 20,000 sacks of oysters were transferred from the unapproved East Pass area of Calcasieu Lake to the public Reef Area, to be harvested by the local fishing industry during the November 1983-March 1984 open season. This operation was supervised by division personnel.

Monitoring and Research

Shrimp and groundfish populations, along with associated hydrological and physical parameters, were monitored on a coastwide basis using standardized gear and methodology in conjunction with P. L. 88-309 Federal Aid project 2-381-R. During 1983, a total of 3,581 samples were taken, including 483 plankton samples, 1,758 inshore six-foot trawl samples, 991 sixteen-foot inshore trawl samples, and 349 sixteen-foot offshore trawl samples.

During 1983, field work on the wing net project was completed. As in 1982, samples were taken on randomly selected days on each new and full moon phase. In September, October and November tidal fluctuations and current speeds were such that sampling gear would not function properly. Current velocities greater than 23 cm/sec are needed to make the nets function properly.

Seventy-two, square-meter, oyster samples were taken from 24 sampling sites east of the Mississippi River. The information gathered in this annual sampling program allowed the Department to determine a population estimate of oysters for the season. Data from six spat-set (Butler Plate) monitoring stations were collected weekly during the warmer months and bi-weekly during the colder months. This program provided information to determine the onset of oyster spawning. This data has been important in planning shell plants and predicting production.

During the winter of 1983, Section personnel were involved in the initiation of an interagency water quality monitoring program for Barataria Bay. Cooperators in the monitoring program include the LDWF, LDNR, LDHHR, Plaquemines Parish, and Jefferson Parish. The objectives of the program are to coordinate and combine the ongoing sampling programs of the cooperating agencies in an attempt to identify water quality problem areas and point source areas of coliform contamination.

Section personnel worked closely with the Coastal Use Permit Section in reviewing numerous permit applications. Two of these applications had major implications, most noticably from the standpoint that they could set a precedent for future land use activities in other marsh areas whose cumulative impacts could be far-reaching. One of these applications involved blocking public access to a large amount of marsh acreage and the other involved development of a 1,700 acre mariculture impoundment.

Spotted Seatrout and Red Drum - an Overview was the title of a report developed by a joint task force composed of biologists from the Seafood and Fish Divisions, Louisiana Department of Wildlife and Fisheries. This report was developed mostly as a legislative aid and as a source of information upon which management decisions may be based. It is a comprehensive report, including 111 reference sources, and has been utilized by various public bodies during the annum, including the Legislature during the 1983 season.

A significant new commercial fishery for king mackerel developed in the winter of 1983. Section personnel arranged for a public meeting on Grand Isle between representatives of the Gulf of Mexico Fishery Management Council and local mackerel fishermen in the spring of 1983 and worked with Council representatives in working out a possible solution.

Before 1983, Louisiana did not collect fishery dependent fishery statistics; it relied on NMFS for that information. For several years, it has been evident that more effort was needed in this field; the proposed finfish management section discussed previously would have included as many as 5 state funded port agents. The development of this section was unsuccessful; however, Louisiana did begin to collect fishery dependent data as a result of a Statistical Cooperative Agreement signed with NMFS under the new State/Federal Statistics Initiative. Under this agreement Louisiana began gathering catch and effort data and length frequencies of king mackerel landed at Louisiana ports. Secondary goals of this project are to obtain catch and effort data, length frequencies and biological data on other coastal pelagic fisheries of Louisiana, including Spanish mackerel, cobia, and little tunny. This sampling effort is based at Grand Isle, the center of Louisiana's mackerel fishery.

Oyster Lease Survey Section

In 1983, this section surveyed 648 oyster lease applications out of a total of 832 scheduled surveys. The difference resulted in part from 156 applications which could not be surveyed as a result of bad weather conditions or low tides, and 20 applicants who failed to show up for surveys. The process of surveying was greatly aided by the Monument Control Project which, since 1966, has established approximately 2400 monuments from the upper Biloxi marsh in St. Bernard parish westward to Terrebonne Parish. These monuments allow accurate, quick surveys to be conducted.

Seismic Section

In 1983, the Seismic Section underwent an administrative reorganization. As a result the section now consists of the Seismic Administrator, two regional supervisors, three acting seismic operations supervisors, and 27 agents. Fifty seismic crews were permitted to operate in the state. A revision of rules and regulations began, partly in response to Act 662 of the 1983 Legislature. This Act made confidential the results obtained in seismic operations, provided procedures for giving notice of impending seismic operations, and provided that consent of the owner be given before seismic operations can occur on private lands.

Hydrological Management Section

This Section has established and is maintaining fifteen continuous recording environmental data stations. The data obtained includes conductivity, salinity, water temperature, rainfall, tide, wind and current velocity. These data are used in making management recommendations, and in the investigations of oyster mortality and contamination.

Inshore-offshore transects mapped the areal extent of low oxygen conditions in the near-shore shelf waters. The severity of hypoxia (low oxygen) in the waters of the near-shore area was similar to previous years. In August, sampling in the area off of Grand Isle showed anoxia (total lack of dissolved oxygen) at some stations.

This was concurrent with the most pronounced salinity stratification of the year and seemed to be related to prolonged periods of little or no wind.

This section compiled maps of environmentally sensitive areas of coastal Louisiana, a history of the Department's involvement in shell dredging since 1916 and a bibliography of technical publications by Seafood Division personnel. Section personnel represented the Department on the Louisiana Coastal Commission and on the Technical Advisory Committee of the Coastal Protection Trust Fund Task Force. The Section assisted in the review of the Southeastern Louisiana University Lake Maurepas study in conjunction with an ongoing study by the Fisheries Management Section. In April, the Office began negotiations with the U.S. Department of Energy concerning a $3,000,000 grant for a three-year study of pollution loading and its effects on the Calcasieu River/Lake ecosystem. This project was subcontracted to McNeese State University of Lake Charles, with administration and technical review being handled by the Hydrological Management Section.

The Seafood Division participated in the Southeast Area Monitoring and Assessment Program (SEAMAP) for the second year; coordination in 1983 was provided by this section. The focus of this year's participation was the finalization of a five year operations plan. The plan delineated SEAMAP organizations, goals, operations, survey plans, program management, and budgetary information. The SEAMAP Subcommittee of the Technical Coordinating Committee of the Gulf States Marine Fisheries Commission produced a 1983 SEAMAP Marine Directory to inform marine agencies of ongoing research programs in the Gulf of Mexico. SEAMAP has established several work groups; the Division has representatives on the Environmental, the Shrimp/Groundfish, and the Red Drum working groups. The recently established Red Drum working group will assess current techniques available for identification of red drum stocks in the Gulf of Mexico.

The Division participated in the June/July SEAMAP survey of the northern Gulf of Mexico. Shrimp, groundfish, larval fish, and environmental parameters were surveyed by the Division in near-shore waters; vessels from the National Marine Fisheries Service surveyed deeper waters (5-45 fathoms). A survey of larval fish and environmental parameters was completed in the fall. The Section has begun a study of the larval sciaenids taken during 1982 SEAMAP sampling.

Fish Kill Section

The Fish Kill Section investigated a total of 13 kills in 1983; 12 concerned finfish and 1 concerned crabs. Of these investigations, 10 were caused primarily by low dissolved oxygen and 3 were caused by trawl discards, or sewage (with related low pH and dissolved oxygen).

In addition, five special reports were completed. These consisted of:

1) a follow-up study of sewage-polluted Elmwood Canal;
2) water analyses of several duck ponds;
3) oyster mortality in Bay Adams;
4) a comprehensive report on the water quality in Lake Pontchartrain relative to the opening of the Bonne Carre Spillway;
5) a report dealing with possible sites to dump unwanted oil structures.

At the end of the year, this Section was compiling a report on the coastwide effects of extremely cold weather which occurred at the end of 1983. On December 23, a strong cold front passed through coastal Louisiana. As a result of strong winds and high barometric pressures, tides in the coastal area were severely depressed. This exposed large expanses of intertidal oysters and trapped many fish in shallow ponds and bays. Air temperatures at the Division's Sister Lake Camp in Terrebonne Parish was 20 degrees F. on the morning of December 24 and approached 12 degrees F. on December 25. Air temperatures did not rise above freezing at the Sister Lake Camp until December 27. On December 25 and 26, large sections of Bayou Du Large were frozen; ice was observed as far as 100 feet from the bank in Sister Lake.

As a result of the freezing temperatures, numerous fish and oyster mortalities were observed coastwide. The heaviest impacted finfish species were red drum, spotted seatrout, and sheepshead, although dead croaker, spot, black drum, mullet and oysters were also observed. A complete report of the effects of this fish kill will be released in 1984.

LOOP

Environmental monitoring of the Louisiana Offshore Oil Port (LOOP) continued for its sixth year. The estuarine and offshore areas in the vicinity of LOOP operations were intensively sampled to determine impacts. The biological communites were examined by regular sampling of shrimp and bottomfish, zooplankton (including larval fish), and benthos. Habitats were characterized with constant records of salinity, water temperature, current and tide throughout the area as well as water and sediment chemistry analyses. Regular habitat inspection flights were made along the LOOP corridor and over other pipelines which radiate from the oil storage facilities at the Clovelly salt dome. A preliminary summary of the first four years of the LOOP environmental monitoring program was prepared.

The Division assisted LOOP, Inc., in the preparation of the LOOP "Oil Spill Contingency Atlas - Sensitivity of Louisiana Coast to Spilled Oil". This atlas is composed of 7½ minute series topographic maps which delineate seasonal concentrations of fish and wildlife sensitive habitats in the LOOP vicinity. In the event of a LOOP oil spill the atlas would be used to guide the oil diversion, containment and clean-up operations.

Aviation Section

The Aviation Section has played an important role in the operation of the Louisiana Department of Wildlife and Fisheries during the past year. Law enforcement work, wildlife inventories, range surveys, and similar habitat inspection flights dominate daily activities of the section.

The topography of Louisiana's vast coastal marsh is such that law enforcement work and habitat surveys would be virtually impossible without the use of aircraft. Helping to control out-of-season shrimping in inside waters along Louisiana's seven million acres of coastal marshes has been a major activity of the Aviation Section. Daily shrimp patrols are flown.

Department aircraft are used in spotting night hunting, and in this type of patrolling, the department's excellent radio communications between planes, boats and vehicles makes the use of aircraft even more valuable.

One of the department's aircraft, paid for by federal funds, is used for taking aerial counts of waterfowl during the six month period when many migratory waterfowl are present in the state and for inspecting wintering habitat for migrating waterfowl. Use of this aircraft is restricted by federal regulations to specified and specialized flights.

Aircraft are often used in the rapid transportation of post-larval fish from hatcheries to rearing installations to prevent or reduce mortality.

The department's aircraft are always available for use during emergencies or times of natural disaster.